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P.O. Box 1967
Midland, MI 48641-1967

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NIEBAUER, RONALD T	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/591,930
Filing Date: September 07, 2006
Appellant(s): SPENCER, MICHAEL VERNON

Brian J. Hubbard
<u>For Appellant</u>

EXAMINER'S ANSWER

This is in response to the appeal brief filed 1/8/09 appealing from the Office action mailed 10/28/08.

The appeal brief is filed in the new format under the revised BPAI final rule before the effective date of the BPAI final rule. The Office published the BPAI final rule to amend the rules governing practice before the BPAI in *ex parte* patent appeals. *See Rules of Practice Before the Board of Patent Appeals and Interferences in Ex Parte Appeals; Final Rule, 73 FR 32938 (June 10, 2008), 1332 Off. Gaz. Pat. Office 47 (July 1, 2008).* However, the effective date for the BPAI final rule has been delayed. *See Rules of Practice Before the Board of Patent Appeals and Interferences in Ex Parte Appeals; Delay of Effective and Applicability Dates, 73 FR 74972 (December 10, 2008).* In the notice published on November 20, 2008, the Office indicated that the Office will not hold an appeal brief as non-compliant solely for following the new format even though it is filed before the effective date. *See Clarification of the Effective Date Provision in the Final Rule for Ex Parte Appeals, 73 FR 70282 (November 20, 2008).* Since the appeal brief is otherwise acceptable, the Office has accepted the appeal brief filed by appellant.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(4) Status of Amendments After Final

The amendment after final rejection filed on 10/8/08 has been entered.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. The changes are as follows:

WITHDRAWN REJECTIONS

The following grounds of rejection are not presented for review on appeal because they have been withdrawn by the examiner.

The rejection of claims 1-5,7,8,17-19 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-13 of U.S. Patent No. 6,261,218 ('218) in view of Schulz (US 6,261,218), Keary (US 6,294,008), Pyle (US 2,711,965), and Savage (US 3,728,331) is withdrawn.

The rejection of claims 1-5,7,8,17-19 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 10-20 of U.S. Patent No. 6,294,008 ('008) in view of Schulz (US 6,261,218), Keary (US 6,294,008), Pyle (US 2,711,965), and Savage (US 3,728,331) is withdrawn.

In the instant case, appellant provide new arguments (page 13) which are persuasive. Further, MPEP section 804 states: "A double patenting rejection of the obviousness-type>, if not based on an anticipation rationale,< is "analogous to [a failure to meet] the nonobviousness requirement of 35 U.S.C. 103" except that the patent principally underlying the double patenting rejection is not considered prior art. In re Braithwaite, 379 F.2d 594, 154 USPQ 29 (CCPA 1967)."

(7) Claims Appendix

It is noted that Claim 9 is not listed in the claims section provided by the appellant. The record is clear (see preliminary amendment and claim set 9/7/06 and subsequent claim sets) that claim 9 is cancelled. Further, appellants have provided no arguments relating to claim 9. As such, claim 9 is treated as a cancelled claim.

(8) Evidence Relied Upon

The following is a listing of the evidence relied upon in the rejection of claims under appeal.

US-6,261,218 07-2001 Schulz.

US-6,294,008 09-2001 Keary et al.

US-2,711,965 06-1955 Pyle.

US-3,728,331 04-1973 Savage et al.

US-6,306,333 10-2001 Rosenberg et al.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5,7,8,17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schulz (US 6,261,218; referred to as "Schulz"), Keary (US 6,294,008; referred to as "Keary"), Pyle (US 2,711,965; referred to as "Pyle"), and Savage (US 3,728,331; referred to as "Savage").

Schulz (US 6,261,218) teach a process for making a cellulose ether (abstract). In particular, ethylcellulose (column 6 line 38) is a cellulose ether of the instantly claimed invention. Schulz teach depolymerization of the cellulose ether specifically via the gaseous acid

hydrogen chloride (claim 9) as recited in claims 1,3,18 of the current invention. Schulz teach the process in the presence of water, specifically at least 0.5 weight percent and no more than 5.0 weight percent (claims 2,4) as recited in claims 4,19 of the current invention. Schulz teach that a low molecular weight cellulose ether is formed such that a two percent aqueous solution has a viscosity preferably about 1 to about 100 cP at 20C (1cP = 1mPa•s) (column 4 line 32-37). Schulz teach the process including etherification of the alkalized cellulose and depolymerization (abstract). Specifically, Schulz teach an etherification reaction with ethyl chloride (column 3 lines 44-50) and depolymerization with gaseous hydrogen halide (column 4 lines 51-57) as recited in claim 8 of the current invention.

Schulz does not expressly teach the ethoxyl content or viscosity of the starting material of claim 1 and 8; the HCl weight percent as in claim 5; or the presence of an organic solvent with the ethyl chloride as in claim 8.

It would have been obvious to one skilled in the art at the time of invention to determine all optimum and operable conditions (e.g. HCl weight percent, for example), because such conditions are art-recognized result-effective variables that are routinely determined and optimized in the art through routine experimentation. ("[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). *See* MPEP § 2145.05).

In the instant case, the prior art teaches related processes within the range of the instant invention.

Keary (US 6,294,008) teach cellulose ether compositions having low molecular weight and processes of making (abstract). Thus Keary and Schulz both teach compositions of celluose ethers. Keary specifically teach the depolymerization of cellulose ether (column 1 line 61-65, claim 10) such that the viscosity is 200 cP or less by using hydrogen chloride. Keary specifically teach that the hydrogen chloride be present at 0.10 to about 0.19 weight percent (claim 20). Therefore Keary teach a similar process with specific hydrogen chloride ranges as in claim 5 of the instant invention. Since Keary and Schulz both teach both teach compositions of celluose ethers and methods of making one would be motivated to combine the teachings.

Pyle (US 2,711,965) teach the treatment of cellulose ethers (first paragraph). Pyle teach that ethylcellulose compositions are known to be useful (column 1 lines 24-27). Pyle specifically describe cellulose ethers that are organic solvent-soluble in common organic solvents (column 4 line 14-18). In example 1, Pyle teach a specific ethycellulose composition that contained 46.5% ethoxyl groups and was dissolved in a solvent consisting of 80 parts toluene and 20 parts ethanol to give a 5% solution with a viscosisty of 97 cps (i.e. 97 mPa•s) at 25 °C (column 2 lines 14-18). As such, Pyle teach the claim limitations regarding the ethoxyl content and viscosity of the starting material of the instant invention. Since Schulz teach a general process of depolymerizing cellulose ethers one would be motivated to use the process for cellulose ethers specifically those cellulose ethers which have known applications. Pyle recognize that ethylcelluloses with preferably 43% to 48% ethoxyl content are particularly useful (column 4 lines 23-27). In example 1, Pyle teach a specific ethycellulose composition that contained 46.5% ethoxyl groups and was dissolved in a solvent consisting of 80 parts toluene and 20 parts ethanol to give a 5% solution with a viscosisty of 97 cps (i.e. 97 mPa•s) at 25 °C (column 2 lines 14-18). As such,

Pyle provides a specific example and the reference itself is evidence of the known range of useful ethoxyl concentrations. Therefore Pyle teach a similar process with specific ethoxyl content and viscosity of the starting material as in claims 1,8 of the currently claimed invention as well as the presence of organic solvents as in claim 8a of the current invention.

Savage (US 3,728,331) teach a process for reducing the viscosity of a cellulose ether (abstract). Savage specifically teaches the process for ethyl cellulose (column 2 line 19) and teaches depolymerization (column 2 line 49) using hydrogen peroxide (title). Savage teach that the final product with its viscosity adjusted as required for a particular application can be used or packaged without further treatment (column 3 lines 66-68). Schulz teach a process for making low molecular weight cellulose ethers (title). Schulz teach that the high molecular weight cellulose ether (such as ethylcellulose (column 6 line 38) is depolymerized by contacting with a strong acid (column 4 lines 39-41) in particular hydrogen chloride (claim 9). Schulz teach 'partial' or substantial neutralization of the acid after depolymerization (abstract). Since Schulz teach the step as partial one would recognize that the step is not necessarily critical. Although Schulz does not expressly discuss the reason for neutralization (partial or complete) Savage does expressly discuss process conditions (column 3 line 30) after depolymerization. Savage teach a process for reducing viscosity of a cellulose ether (such as ethyl cellulose (column 2 line 19)) with hydrogen peroxide (title) (i.e. CELLULOSE ETHER + HYDROGEN PEROXIDE) while Schulz teach that the cellulose ether (such as ethylcellulose) (column 6 line 38) is depolymerized by contacting with a strong acid (column 4 lines 39-41) in particular hydrogen chloride (claim 9) (i.e. CELLULOSE ETHER + HYDROGEN CHLORIDE). Both Savage and Schulz teach a goal

of depolymerization of cellulose ether and as such recognize a particular problem in the art. Savage teaches that the hydrogen peroxide initiates the scission of the cellulose ether (column 3 lines 50-51) and that residual peroxide can be removed by heating shortly after blending at particular temperatures to decompose the peroxide (column 3 lines 50-60). As such, Savage teach that heating can be used to neutralize the initiating agent of the reaction which is hydrogen peroxide since decomposing the peroxide will make it ineffective. Since the art (see for example Schulz and Savage) teach CELLULOSE ETHER + INITIATOR for a depolymerization reaction one would recognize that neutralization occurs when the initiator is rendered ineffective. In the instant case, one would recognize that the heating step of Savage is aimed at rendering ineffective the initiator (i.e. hydrogen peroxide). The analogous step in the process of Schulz would be aimed at rendering ineffective the initiator hydrogen chloride.

Taken together, Schulz and Savage both teach a goal of depolymerization of cellulose ether by using an initiator (Schulz teach hydrogen chloride and Savage teach hydrogen peroxide) and as such recognize a particular problem in the art. In discussing the process conditions of the depolymerization process (column 3 line 30) Savage notes that the viscosity is adjusted as required for a particular application and can be used or packaged without further treatment (column 3 lines 66-68). As such, Savage suggests that additional processing after the depolymerization is not critical and depends on the particular application. In Run 2-2 (Column 4) Savage shows a viscosity drop from 400 cps (the viscosity of the control of run 2-1) to 85 cps with no heating (i.e. neutralization step). Savage expressly teaches that the final product can be packaged without further treatment (column 3 lines 66-68). In the instant case, Savage provides details of the final processing steps and suggests that the steps are unnecessary unless a particular

product such as a viscosity grade stable product is desired (column 3 lines 50-70). Since Schulz does not teach a need for a viscosity grade stable product (nor do the instant claims expressly refer to stability) one would be motivated to use and apply the teachings of Savage regarding final processing steps to the method of Schulz. In particular, one would be motivated to carry out the method of Schulz without a neutralization step. One would be motivated to package the depolymerized ethylcellulose without neutralization steps for applications in which fewer steps are desired (to reduce costs, simplified operation, or for immediate use for example). One would have an expectation of success based on the teachings of Savage. Further, it is noted that the goal of Schulz is depolymerization. Schulz expressly teach the acid as the initiator of the depolymerization (column 4 lines 39-41). Neutralizing the hydrogen chloride (i.e. the initiator) which is the initiator that leads to the depolymerization is contrary to the goal of depolymerizing the cellulose.

In particular, one would be motivated to optimize the process to reduce the cost of the process by reducing the number of steps and materials needed for example. As such one would package the ethylcellulose without a neutralization step as described by Savage thus meeting the limitations of claims 1,8 of the instant invention. From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention.

It has been recently held that “Neither §103's enactment nor *Graham*'s analysis disturbed the Court's earlier instructions concerning the need for caution in granting a patent based on the combination of elements found in the prior art.” KSR v. Teleflex, 550 U.S. ___, 82 USPQ2d 1385, 1389 (2007). The KSR court stated that “a combination of familiar elements according to

known methods is likely to be obvious when it does no more than yield predictable results." KSR at 1389. In the instant case, all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods and the combination would have yielded predictable results.

In the instant case all the claimed elements (ethylcellulose and packaging of ethylcellulose) were known in the art as discussed above and one skilled in the art could have combined the elements by known methods and the combination would have yielded predictable results. From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references.

Section 2111.04 of the MPEP states:

> Claim scope is not limited by claim language that suggests or makes optional but does not require steps to be performed, or by claim language that does not limit a claim to a particular structure. However, examples of claim language, although not exhaustive, that may raise a question as to the limiting effect of the language in a claim are:
> (A) " adapted to " or "adapted for " clauses;
> (B) " wherein " clauses; and
> (C) " whereby " clauses.
> The determination of whether each of these clauses is a limitation in a claim depends on the specific facts of the case.

In the instant case, claims 2 and 7 recite wherein clauses about the product produced. It is noted that claim 7 also recites limitations about the starting material, however the range of viscosities is within the ranges cited above. Since the wherein clause does not result in an additional step or require steps to be performed the claim limitations are met from the above cited references.

It is noted that in the instant case, the statutory basis and evidence relied upon for the rejections is the same. For conciseness and clarity and to address appellants request for clarification (see page 6), the discussion has changed slightly but is not a new ground of rejection (see section 1207.03 III of the MPEP).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-5,7,8,17-19 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 6,306,333 (Rosenberg et al referred to as " '333") in view of Schulz (US 6,261,218), Keary (US 6,294,008), Pyle (US 2,711,965), and Savage (US 3,728,331).

'333 teach a process for making cellulose specifically a low molecular weight cellulose ether comprising providing a cellulose ether of 200 cP or more in a two percent aqueous solution and contacting the cellulose ether with an acid to depolymerize to cellulose (claim 1).

'333 does not expressly teach ethylcellulose, hydrogen chloride, etherifying, or specific ethoxyl contents.

One would have been motivated to combine '333 with the work of Schulz since both teach the making of cellulose ethers. Schulz (US 6,261,218) teach a process for making a cellulose ether (abstract). In particular, ethylcellulose (column 6 line 38) is a cellulose ether of the invention. Schulz teach depolymerization of the cellulose ether specifically via the gaseous acid hydrogen chloride (claim 9) as recited in claims 1,3,18 of the currently claimed invention. Schulz teach the process in the presence of water, specifically at least 0.5 weight percent and no more than 5.0 weight percent (claims 2,4) as recited in claims 4,19 of the current invention. Schulz teach that a low molecular weight cellulose ether is formed such that a two percent aqueous solution has a viscosity preferably about 1 to about 100 cP at 20C (1cP = 1mPa•s) (column 4 line 32-37). Schulz teach the process including etherification of the alkalized cellulose and depolymerization (abstract). Specifically, Schulz teach an etherification reaction with ethyl chloride (column 3 lines 44-50) and depolymerization with gaseous hydrogen halide (column 4 lines 51-57) as recited in claim 8 of the current invention.

Schulz does not expressly teach the ethoxyl content or viscosity of the starting material of claim 1 and 8; the HCl weight percent as in claim 5; or the presence of an organic solvent with the ethyl chloride as in claim 8.

It would have been obvious to one skilled in the art at the time of invention to determine all optimum and operable conditions (e.g. HCl weight percent, for example), because such conditions are art-recognized result-effective variables that are routinely determined and optimized in the art through routine experimentation. ("[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). *See* MPEP § 2145.05).

In the instant case, the prior art teaches related processes within the range of the instant invention.

Keary (US 6,294,008) teach cellulose ether compositions having low molecular weight and processes of making (abstract). Thus Keary and Schulz both teach compositions of celluose ethers. Keary specifically teach the depolymerization of cellulose ether (column 1 line 61-65, claim 10) such that the viscosity is 200 cP or less by using hydrogen chloride. Keary specifically teach that the hydrogen chloride be present at 0.10 to about 0.19 weight percent (claim 20). Therefore Keary teach a similar process with specific hydrogen chloride ranges as in claim 5 of the instant invention. Since Keary and Schulz both teach both teach compositions of celluose ethers and methods of making one would be motivated to combine the teachings.

Pyle (US 2,711,965) teach the treatment of cellulose ethers (first paragraph). Pyle teach that ethylcellulose compositions are known to be useful (column 1 lines 24-27). Pyle specifically describe cellulose ethers that are organic solvent-soluble in common organic solvents (column 4 line 14-18). In example 1, Pyle teach a specific ethycellulose composition that contained 46.5% ethoxyl groups and was dissolved in a solvent consisting of 80 parts toluene and 20 parts ethanol

to give a 5% solution with a viscosisty of 97 cps (i.e. 97 mPa•s) at 25 °C (column 2 lines 14-18). As such, Pyle teach the claim limitations regarding the ethoxyl content and viscosity of the starting material of the instant invention. Since Schulz teach a general process of depolymerizing cellulose ethers one would be motivated to use the process for cellulose ethers specifically those cellulose ethers which have known applications. Pyle recognize that ethylcelluloses with preferably 43% to 48% ethoxyl content are particularly useful (column 4 lines 23-27). In example 1, Pyle teach a specific ethycellulose composition that contained 46.5% ethoxyl groups and was dissolved in a solvent consisting of 80 parts toluene and 20 parts ethanol to give a 5% solution with a viscosisty of 97 cps (i.e. 97 mPa•s) at 25 °C (column 2 lines 14-18). As such, Pyle provides a specific example and the reference itself is evidence of the known range of useful ethoxyl concentrations. Therefore Pyle teach a similar process with specific ethoxyl content and viscosity of the starting material as in claims 1,8 of the current invention as well as the presence of organic solvents as in claim 8a of the current invention.

Savage (US 3,728,331) teach a process for reducing the viscosity of a cellulose ether (abstract). Savage specifically teaches the process for ethyl cellulose (column 2 line 19) and teaches depolymerization (column 2 line 49) using hydrogen peroxide (title). Savage teach that the final product with its viscosity adjusted as required for a particular application can be used or packaged without further treatment (column 3 lines 66-68). Schulz teach a process for making low molecular weight cellulose ethers (title). Schulz teach that the high molecular weight cellulose ether (such as ethylcellulose (column 6 line 38) is depolymerized by contacting with a strong acid (column 4 lines 39-41) in particular hydrogen chloride (claim 9). Schulz and '333

teach 'partial' or substantial neutralization of the acid after depolymerization (abstract). Since Schulz and '333 teach the step as partial one would recognize that the step is not necessarily critical. Although Schulz does not expressly discuss the reason for neutralization (partial or complete) Savage does expressly discuss process conditions (column 3 line 30) after depolymerization. Savage teach a process for reducing viscosity of a cellulose ether (such as ethyl cellulose (column 2 line 19)) with hydrogen peroxide (title) (i.e. CELLULOSE ETHER + HYDROGEN PEROXIDE) while Schulz teach that the cellulose ether (such as ethylcellulose) (column 6 line 38) is depolymerized by contacting with a strong acid (column 4 lines 39-41) in particular hydrogen chloride (claim 9) (i.e. CELLULOSE ETHER + HYDROGEN CHLORIDE). Both Savage and Schulz teach a goal of depolymerization of cellulose ether and as such recognize a particular problem in the art. Savage teaches that the hydrogen peroxide initiates the scission of the cellulose ether (column 3 lines 50-51) and that residual peroxide can be removed by heating shortly after blending at particular temperatures to decompose the peroxide (column 3 lines 50-60). As such, Savage teach that heating can be used to neutralize the initiating agent of the reaction which is hydrogen peroxide since decomposing the peroxide will make it ineffective. Since the art (see for example Schulz and Savage) teach CELLULOSE ETHER + INITIATOR for a depolymerization reaction one would recognize that neutralization occurs when the initiator is rendered ineffective. In the instant case, one would recognize that the heating step of Savage is aimed at rendering ineffective the initiator (i.e. hydrogen peroxide). The analogous step in the process of Schulz would be aimed at rendering ineffective the initiator hydrogen chloride.

Taken together, Schulz and Savage both teach a goal of depolymerization of cellulose ether by using an initiator (Schulz teach hydrogen chloride and Savage teach hydrogen peroxide) and as such recognize a particular problem in the art. In discussing the process conditions of the depolymerization process (column 3 line 30) Savage notes that the viscosity is adjusted as required for a particular application and can be used or packaged without further treatment (column 3 lines 66-68). As such, Savage suggests that additional processing after the depolymerization is not critical and depends on the particular application. In Run 2-2 (Column 4) Savage shows a viscosity drop from 400 cps (the viscosity of the control of run 2-1) to 85 cps with no heating (i.e. neutralization step). Savage expressly teaches that the final product can be packaged without further treatment (column 3 lines 66-68). In the instant case, Savage provides details of the final processing steps and suggests that the steps are unnecessary unless a particular product such as a viscosity grade stable product is desired (column 3 lines 50-70). Since Schulz does not teach a need for a viscosity grade stable product (nor do the instant claims expressly refer to stability) one would be motivated to use and apply the teachings of Savage regarding final processing steps to the method of Schulz. In particular, one would be motivated to carry out the method of Schulz without a neutralization step. One would be motivated to package the depolymerized ethylcellulose without neutralization steps for applications in which fewer steps are desired (to reduce costs, simplified operation, or for immediate use for example). One would have an expectation of success based on the teachings of Savage. Further, it is noted that the goal of Schulz is depolymerization. Schulz expressly teach the acid as the initiator of the depolymerization (column 4 lines 39-41). Neutralizing the hydrogen chloride (i.e. the initiator)

which is the initiator that leads to the depolymerization is contrary to the goal of depolymerizing the cellulose.

In particular, one would be motivated to optimize the process to reduce the cost of the process by reducing the number of steps and materials needed for example. As such one would package the ethylcellulose without a neutralization step as described by Savage thus meeting the limitations of claims 1,8 of the instant invention. From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention.

It has been recently held that "Neither §103's enactment nor *Graham*'s analysis disturbed the Court's earlier instructions concerning the need for caution in granting a patent based on the combination of elements found in the prior art." KSR v. Teleflex, 550 U.S. ___, 82 USPQ2d 1385, 1389 (2007). The KSR court stated that "a combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." KSR at 1389. In the instant case, all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods and the combination would have yielded predictable results.

In the instant case all the claimed elements (ethylcellulose and packaging of ethylcellulose) were known in the art as discussed above and one skilled in the art could have combined the elements by known methods and the combination would have yielded predictable results. From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention.

Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references.

Section 2111.04 of the MPEP states:

> Claim scope is not limited by claim language that suggests or makes optional but does not require steps to be performed, or by claim language that does not limit a claim to a particular structure. However, examples of claim language, although not exhaustive, that may raise a question as to the limiting effect of the language in a claim are:
> (A) " adapted to " or "adapted for " clauses;
> (B) " wherein " clauses; and
> (C) " whereby " clauses.
> The determination of whether each of these clauses is a limitation in a claim depends on the specific facts of the case.

In the instant case, claims 2 and 7 recite wherein clauses about the product produced. It is noted that claim 7 also recites limitations about the starting material, however the range of viscosities is within the ranges cited above. Since the wherein clause does not result in an additional step or require steps to be performed the claim limitations are met from the above cited references

It is noted that in the instant case, the statutory basis and evidence relied upon for the rejections is the same. For conciseness and clarity and to address appellants request for clarification (see page 6), the discussion has changed slightly but is not a new ground of rejection (see section 1207.03 III of the MPEP).

(10) Response to Arguments

Appellants Arguments – 103 rejection: 1. The examiner erred by failing to meet all the limitations of the claims

Appellants argue (pages 7-9) that the claim limitation ‘packaging the depolymerized ethylcellulose without a neutralization step’ is not met. Appellants argue that the cited references do not correct the deficiency and that Savage teach peroxide treatment and does not mention neutralization. In the statement of facts (page 6) Appellants seek clarification as to the claim interpretation of ‘neutralizaton’. Appellants assert (page 8) that 'neutralization’ means increasing the pH of an acid by adding base or decreasing the pH of a base by adding an acid. Appellants argue that claim limitations regarding the ethoxyl content are not met by the prior art and that there is no finding regarding particular variables. Appellants argue that the examiner has failed to recognize that the ethoxyl content has an influence on properties.

Appellants Arguments – 103 rejection: 2. The examiner erred by failing to establish a reason for combining the references

Appellants argue (pages 9-10) that there is no evidence that depolymerization with hydrogen chloride and depolymerization with hydrogen peroxide are sufficiently similar to combine. Appellants argue that Savage has no teaching regarding neutralization.

Appellants Arguments – 103 rejection: 3. The examiner erred by failing to give weight to statements in the specification

Appellants argue (pages 10-11) that the ethylcellulose has an unexpectedly high shelf life. In the statement of facts (page 6) Appellants seek clarification as to the evidentiary burden in advantages stated in the original specification. Appellants argue (pages 10-11) that assertions

in the specification must give weight. Appellants argue (pages 10-11) that the results are contrary to expectation.

Appellants Arguments – Double Patenting (Rosenburg in view of Shulz, Keary, Pyle , and Savage): B. The examiner erred by failing to meet all the limitations of the claims

Appellants argue (page 12-13) that Rosenberg teaches ‘partially or substantially neutralizing the acid’ which is the opposite of the present claims. Appellants argue that Rosenberg fail to teach ethylcellulose, specific ethoxyl contents, or hydrogen halide. Appellants argue that there is no evidence that depolymerization with an acid and with hydrogen peroxide are similar to combine the references. Appellants argue that neutralization in the Savage process is meaningless.

Appellants Arguments – Double Patenting (Shulz in view of Shulz, Keary, Pyle , and Savage):C.

Appellants argue (page 13) that the rejection is not sufficiently reasoned.

Appellants Arguments – Double Patenting (Keary in view of Shulz, Keary, Pyle , and Savage):D.

Appellants argue (page 13) that the rejection is not sufficiently reasoned.

Response to Arguments 103 rejection: 1. The examiner erred by failing to meet all the limitations of the claims

Although Appellants argue (pages 7-9) that the claim limitation 'packaging the depolymerized ethylcellulose without a neutralization step' is not met, it is first noted that Schulz teach 'partially or substantially neutralizing the acid' (abstract). It is noted that section 2123 II of the MPEP states that alternative embodiments constitute prior art. As such, Schulz recognized 'partially' neutralizing the acid. One would recognize that a partial neutralization is an incomplete neutralization. Since Schulz teach a 'partial' neutralization, it is clear that complete neutralization is not a critical step of the invention. In fact, Schulz does not recite neutralization in the claims drawn to methods of depolymerizing a cellulose ether by use of an acid such as hydrogen chloride (see claims 1,9).

Although Appellants argue that the cited references do not correct the deficiency and that Savage teach peroxide treatment and does not mention neutralization, Savage teach a process for reducing viscosity of a cellulose ether (such as ethyl cellulose (column 2 line 19)) with hydrogen peroxide (title). In Table 2, Savage shows that cellulose ether treated with hydrogen peroxide (run 2-2) results in a viscosity drop from 400 cps (the viscosity of the control of run 2-1) to 85 cps. In discussing the process conditions (column 3 line 30) Savage notes that the viscosity is adjusted as required for a particular application and can be used or packaged without further treatment (column 3 lines 66-68). Savage does recognize particular applications in which a stable viscosity grade product is desired can include additional steps to ensure such products are achieved (column 3 lines 53-56). Savage teaches that the hydrogen peroxide initiates the scission of the cellulose ether (column 3 lines 50-51) and that residual peroxide can be removed by

heating shortly after blending at particular temperatures to decompose the peroxide (column 3 lines 50-60). In the instant case, Schulz teach a process for making low molecular weight cellulose ethers (title). Schulz teach that the high molecular weight cellulose ether (such as ethylcellulose) (column 6 line 38) is depolymerized by contacting with a strong acid (column 4 lines 39-41) in particular hydrogen chloride (claim 9). Thus Savage teach a process for reducing viscosity of a cellulose ether (such as ethyl cellulose) (column 2 line 19)) with hydrogen peroxide (title) (i.e. CELLULOSE ETHER + HYDROGEN PEROXIDE) while Schulz teach that the high molecular weight cellulose ether (such as ethylcellulose) (column 6 line 38) is depolymerized by contacting with a strong acid (column 4 lines 39-41) in particular hydrogen chloride (claim 9) (i.e. CELLULOSE ETHER + HYDROGEN CHLORIDE). Both Savage and Schulz teach a goal of depolymerization of cellulose ether and as such recognize a particular problem in the art. Following depolymerization (see column 5 line 17) Schulz teach 'partial' neutralization of the acid. Since Schulz teach the step as partial one would recognize that the step is not necessarily critical. Although Schulz does not expressly discuss the reason for neutralization (partial or complete) Savage does expressly discuss process conditions (column 3 line 30) after depolymerization.

In the statement of facts (page 6) Appellants seek clarification as to the claim interpretation of 'neutralizaton'. Appellants assert (page 8) that 'neutralization' means increasing the pH of an acid by adding base or decreasing the pH of a base by adding an acid. In accord with section 2111 of the MPEP the claims are given the broadest reasonable interpretation. A commonly used definition of the word 'neutralize' is to make ineffective. In the instant case, Savage teach a process for reducing viscosity of a cellulose ether (such as ethyl cellulose

(column 2 line 19)) with hydrogen peroxide (title) (i.e. CELLULOSE ETHER + HYDROGEN PEROXIDE) while Schulz teach that the cellulose ether (such as ethylcellulose) (column 6 line 38) is depolymerized by contacting with a strong acid (column 4 lines 39-41) in particular hydrogen chloride (claim 9) (i.e. CELLULOSE ETHER + HYDROGEN CHLORIDE). Savage teaches that the hydrogen peroxide initiates the scission of the cellulose ether (column 3 lines 50-51) and that residual peroxide can be removed by heating shortly after blending at particular temperatures to decompose the peroxide (column 3 lines 50-60). As such, Savage teach that heating can be used to neutralize the initiating agent of the reaction which is hydrogen peroxide since decomposing the peroxide will make it ineffective. Since the art (see for example Schulz and Savage) teach CELLULOSE ETHER + INITIATOR for a depolymerization reaction one would recognize that neutralization occurs when the initiator is rendered ineffective. In the instant case, one would recognize that the heating step of Savage is aimed at rendering ineffective the initiator (i.e. hydrogen peroxide). The analogous step in the process of Schulz would be aimed at rendering ineffective the initiator hydrogen chloride. In reply to appellants' inquiry, one meaning of 'neutralization' includes increasing the pH of an acid by adding base or decreasing the pH of a base by adding an acid. However, such meaning is not the only meaning of the phrase neutralization and such meaning is not read into the claims. It is noted that the instant specification does not provide a specific definition of neutralization to limit it to the asserted definition. Further, it is noted that appellants' own specification (page 6 lines 17-18) states that hydrogen chloride can be removed by stripping with an inert gas such as nitrogen. Thus, adjusting via pH is not the only method of rending the initiator hydrogen chloride ineffective.

Taken together, Schulz and Savage both teach a goal of depolymerization of cellulose ether by using an initiator (Schulz teach hydrogen chloride and Savage teach hydrogen peroxide) and as such recognize a particular problem in the art. In discussing the process conditions of the depolymerization process (column 3 line 30) Savage notes that the viscosity is adjusted as required for a particular application and can be used or packaged without further treatment (column 3 lines 66-68). As such, Savage suggests that additional processing after the depolymerization is not critical and depends on the particular application. In Run 2-2 (Column 4) Savage shows a viscosity drop from 400 cps (the viscosity of the control of run 2-1) to 85 cps with no heating (i.e. neutralization step). Savage expressly teaches that the final product can be packaged without further treatment (column 3 lines 66-68). In the instant case, Savage provides details of the final processing steps and suggests that the steps are unnecessary unless a particular product such as a viscosity grade stable product is desired (column 3 lines 50-70). Since Schulz does not teach a need for a viscosity grade stable product (nor do the instant claims expressly refer to stability) one would be motivated to use and apply the teachings of Savage regarding final processing steps to the method of Schulz. In particular, one would be motivated to carry out the method of Schulz without a neutralization step as recited in the instant claims. One would be motivated to package the depolymerized ethylcellulose without neutralization steps for applications in which fewer steps are desired (to reduce costs, simplified operation, or for immediate use for example) based on the teachings of Savage. One would have a reasonable expectation of success based on the teachings of Savage. Further, it is noted that the goal of Schulz is depolymerization. Schulz expressly teach the acid as the initiator of the depolymerization (column 4 lines 39-41). Neutralizing the hydrogen chloride (i.e. the initiator)

which is the initiator that leads to the depolymerization is contrary to the goal of depolymerizing the cellulose. It is noted that section 2144.04 II of the MPEP states that the omission of an element and its function is obvious if the function of the element is not desired. In the instant case, both Schulz and Savage teach depolymerization of ethylcellulose as a goal. Schulz expressly teach the acid as the initiator of the depolymerization (column 4 lines 39-41). Neutralizing the hydrogen chloride (i.e. the initiator), which is the initiator that leads to the depolymerization, is contrary to the goal of depolymerizing the cellulose. Further, Savage teach that the final product with its viscosity adjusted as required can be packaged without further treatment.

Further, even if one were to consider some type of neutralization step as part of the process, the instant claims merely require 'packaging the depolymerized ethycellulose without a neutralization step after polymerization'. Thus, as long as the ethylcellulose is depolymerized and packaged prior to any neutralization the claim limitations are met. It is noted that Schulz teach in Example 1 (column 6 lines 60 – column 7 line 7) that hydrogen chloride gas was added to a reactor to depolymerize the cellulose. Next, the reactor was placed in an oven (column 78 lines 1-2). Since the depolymerized cellulose was placed in an oven the depolymerized cellulose was packaged without a neutralization step. It is noted that no specific definition is provided for the term 'packaging'. Further, it is noted that at a particular point in time (at the instant the reactor was placed in the oven) that the depolymerized cellulose was packaged as recited in the claims. Savage also teach that if the heating step is to occur it is to occur after the cellulose ether and peroxide have been blended (column 3 lines 53-56). Since the blending necessarily occurs in

a vessel which would enclose or hold (i.e. package) the components, the depolymerized cellulose is packaged prior to any neutralization steps as recited in the instant claims.

Although Appellants argue that claim limitations regarding the ethoxyl content are not met by the prior art and that there is no finding regarding particular variables and argue that the examiner has failed to recognize that the ethoxyl content has an influence on properties, it is noted that the instant rejection is a multiple reference 103 rejection. In the instant case, Schulz teach a process for making a cellulose ether (abstract) which are useful in numerous application (column 6 lines 43-47). Pyle also recognize that cellulose ethers are useful components of compositions (column 1 lines 24-27). In example 1, Pyle teach a specific ethycellulose composition that contained 46.5% ethoxyl groups and was dissolved in a solvent consisting of 80 parts toluene and 20 parts ethanol to give a 5% solution with a viscosisty of 97 cps (i.e. 97 mPa•s) at 25 °C (column 2 lines 14-18). As such, Pyle teach the claim limitations regarding the ethoxyl content. Since Schulz teach a general process of depolymerizing cellulose ethers one would be motivated to use the process for cellulose ethers specifically those cellulose ethers which have known applications. Pyle recognize that ethylcelluloses with preferably 43% to 48% ethoxyl content are particularly useful (column 4 lines 23-27). Further, Pyle teach a specific ethycellulose composition that contained 46.5% ethoxyl groups and was dissolved in a solvent consisting of 80 parts toluene and 20 parts ethanol to give a 5% solution with a viscosisty of 97 cps (i.e. 97 mPa•s) at 25 °C (column 2 lines 14-18). As such, Pyle provides a specific example and the reference itself is evidence of the known range of useful concentrations. Although appellants argue that there is a failure to recognize that the ethoxyl content has an influence on

properties, Pyle teach compositions with the ethoxyl content of the instant invention. Thus the prior art recognize the concentrations of the instant invention.

Response to Arguments 103 rejection: 2. The examiner erred by failing to establish a reason for combining the references

Although Appellants argue (pages 9-10) that there is no evidence that depolymerization with hydrogen chloride and depolymerization with hydrogen peroxide are sufficiently similar to combine, Savage teach a process for reducing viscosity of a cellulose ether (such as ethyl cellulose (column 2 line 19)) with hydrogen peroxide (title) (i.e. CELLULOSE ETHER + HYDROGEN PEROXIDE) while Schulz teach that the cellulose ether (such as ethylcellulose (column 6 line 38) is depolymerized by contacting with a strong acid (column 4 lines 39-41) in particular hydrogen chloride (claim 9) (i.e. CELLULOSE ETHER + HYDROGEN CHLORIDE). Both Savage and Schulz teach a goal of depolymerization of cellulose ether (i.e. CELLULOSE ETHER + INITIATOR) and as such recognize a particular problem in the art. It is noted that MPEP section 2141.01(a) states:

"Under the correct analysis, any need or problem known in the field of endeavor at the time of the invention and addressed by the patent [or application at issue] can provide a reason for combining the elements in the manner claimed. " KSR International Co. v. Teleflex Inc., 550 U.S. ___, ___, 82 USPQ2d 1385, 1397 (2007).

In the instant case, both Savage and Schulz teach a goal of depolymerization of cellulose ether and as such recognize a particular problem in the art.

Section 2141 of the MPEP states:

"A person of ordinary skill in the art is also a person of ordinary creativity, not an automaton."KSR, 550 U.S. at ___, 82 USPQ2d at 1397. "[I]n many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle."Id. Office personnel may also take into account "the inferences and creative steps that a person of ordinary skill in the art would employ."Id. at ___, 82 USPQ2d at 1396.
In the instant case, both Savage and Schulz teach a goal of depolymerization of cellulose ether and as such recognize a particular problem in the art. A person of ordinary skill in the art would consider the suggestive power of the references in order to address the problem in the art.

Although Appellants argue that Savage has no teaching regarding neutralization, in accord with section 2111 of the MPEP the claims are given the broadest reasonable interpretation. A commonly used definition of the word 'neutralize' is to make ineffective. In the instant case, Savage teach a process for reducing viscosity of a cellulose ether (such as ethyl cellulose (column 2 line 19)) with hydrogen peroxide (title) (i.e. CELLULOSE ETHER + HYDROGEN PEROXIDE) while Schulz teach that the cellulose ether (such as ethylcellulose (column 6 line 38) is depolymerized by contacting with a strong acid (column 4 lines 39-41) in particular hydrogen chloride (claim 9) (i.e. CELLULOSE ETHER + HYDROGEN CHLORIDE). Savage teaches that the hydrogen peroxide initiates the scission of the cellulose ether (column 3 lines 50-51) and that residual peroxide can be removed by heating shortly after blending at particular temperatures to decompose the peroxide (column 3 lines 50-60). As such, Savage teach that heating can be used to neutralize the initiating agent of the reaction which is hydrogen peroxide since decomposing the peroxide will make it ineffective. Thus Savage does provide a teaching regarding neutralization. Since the art (see for example Schulz and Savage)

teach CELLULOSE ETHER + INITIATOR for a depolymerization reaction one would recognize that neutralization occurs when the initiator is rendered ineffective. In the instant case, one would recognize that the heating step of Savage is aimed at rendering ineffective the initiator (i.e. hydrogen peroxide). The analogous step in the process of Schulz would be aimed at rendering ineffective the initiator hydrogen chloride.

Response to Arguments – 103 rejection: 3. The examiner erred by failing to give weight to statements in the specification

Although Appellants argue (pages 10-11) that the ethylcellulose has an unexpectedly high shelf life, the key issue when alleging unexpected results is whether or not such statements/data are sufficient to overcome the outstanding 103 rejection. Section 716.02(b) of the MPEP states that the burden is on appellant to establish results are unexpected and significant. Appellants rely on statements in the specification (page 6 lines 19-25) in which they refer to a viscosity drop of less than 1.5%. Such statements appear to be a single data point. There is no negative or positive control in the experiment. Without any reference point or comparative data, it is unclear if a drop of 1.5% is large, small, expected, or unexpected. Without any control experiments it is unclear if the viscosity drop is a function of concentration, storage temperature or other factors. In the instant case, there is no reference point to ascertain if 1.5% is large, small, expected, or unexpected. In particular, it is unclear what is 'unexpected' about the results. It remains unclear how, or in relation to what, such a comparison is being made. Appellants have not shown unexpected results relative to the prior art or relative to any type of control data. It is unclear from Appellants' evidence what one would have obtained from the teachings of the prior

art and how their results are unexpected from the prior art teachings. Further, it is noted that the word stability is not used in the instant claims, nor is any time period for storage mentioned in the instant claims. The claims do recite that the initial viscosity can be from 4 to 400 mPa•s while the final viscosity can be 1 to 100 mPa•s. As such, there is a large range of viscosities.

In the statement of facts (page 6) Appellants seek clarification as to the evidentiary burden in advantages stated in the original specification. In the instant case, the advantages stated in the original specification have been considered. However, a mere statement does not establish that the results are unexpected and significant and does not establish that such statement is adequate to overcome a 103 rejection. Section 716.02(b) of the MPEP states:

The evidence relied *>upon< should establish "that the differences in results are in fact unexpected and unobvious and of both statistical and practical significance." Ex parte Gelles, 22 USPQ2d 1318, 1319 (Bd. Pat. App. & Inter. 1992).

In the instant case, it has not been established that the results are unexpected and unobvious.

Although Appellants argue (pages 10-11) that the results are contrary to expectation, it is unclear what one would have expected the results to be. Appellants rely on statements in the specification (page 6 lines 19-25) in which they refer to a viscosity drop of less than 1.5%. Such statements appear to be a single data point. There is no negative or positive control in the experiment. Without any control experiments it is unclear if the viscosity drop is a function of concentration, storage temperature or other factors. Without any reference point or comparative data, it is unclear if a drop of 1.5% is large, small, expected, or unexpected.

Response to Appellants Arguments – Double Patenting (claims 1-6 of Resenburg in view of Shulz, Keary, Pyle , and Savage): B. The examiner erred by failing to meet all the limitations of the claims

Although Appellants argue (page 12-13) that Rosenberg (i.e. '333) teaches 'partially or substantially neutralizing the acid' which is the opposite of the present claims, it is first noted that Rosenberg teach 'partially or substantially neutralizing the acid'. It is noted that section 2123 II of the MPEP states that alternative embodiments constitute prior art. As such, Rosenberg recognized 'partially' neutralizing the acid. One would recognize that a partial neutralization is an incomplete neutralization. Since Rosenberg teach a 'partial' neutralization, it is clear that complete neutralization is not a critical step of the invention. Further, it is noted that the instant rejection relies on numerous other references than just Rosenberg. Savage teach a process for reducing viscosity of a cellulose ether (such as ethyl cellulose (column 2 line 19)) with hydrogen peroxide (title). In Table 2, Savage shows that cellulose ether treated with hydrogen peroxide (run 2-2) results in a viscosity drop from 400 cps (the viscosity of the control of run 2-1) to 85 cps. In discussing the process conditions (column 3 line 30) Savage notes that the viscosity is adjusted as required for a particular application and can be used or packaged without further treatment (column 3 lines 66-68). Savage does recognize particular applications in which a stable viscosity grade product is desired can include additional steps to ensure such products are achieved (column 3 lines 53-56). Savage teaches that the hydrogen peroxide initiates the scission of the cellulose ether (column 3 lines 50-51) and that residual peroxide can be removed by heating shortly after blending at particular temperatures to decompose the peroxide (column 3 lines 50-60). In the instant case, Rosenberg (claim 1) Schulz teach a process for making low

molecular weight cellulose ethers (title). Schulz teach that the high molecular weight cellulose ether (such as ethylcellulose) (column 6 line 38) is depolymerized by contacting with a strong acid (column 4 lines 39-41) in particular hydrogen chloride (claim 9). Thus Savage teach a process for reducing viscosity of a cellulose ether (such as ethyl cellulose) (column 2 line 19)) with hydrogen peroxide (title) (i.e. CELLULOSE ETHER + HYDROGEN PEROXIDE) while Schulz teach that the high molecular weight cellulose ether (such as ethylcellulose) (column 6 line 38) is depolymerized by contacting with a strong acid (column 4 lines 39-41) in particular hydrogen chloride (claim 9) (i.e. CELLULOSE ETHER + HYDROGEN CHLORIDE). Both Savage and Schulz teach a goal of depolymerization of cellulose ether and as such recognize a particular problem in the art. Following depolymerization (see column 5 line 17) Schulz teach 'partial' neutralization of the acid. Since Schulz teach the step as partial one would recognize that the step is not necessarily critical. Although Schulz does not expressly discuss the reason for neutralization (partial or complete) Savage does expressly discuss process conditions (column 3 line 30) after depolymerization.

In the statement of facts (page 6) Appellants seek clarification as to the claim interpretation of 'neutralizaton'. Appellants assert (page 8) that 'neutralization' means increasing the pH of an acid by adding base or decreasing the pH of a base by adding an acid. In accord with section 2111 of the MPEP the claims are given the broadest reasonable interpretation. A commonly used definition of the word 'neutralize' is to make ineffective. In the instant case, Savage teach a process for reducing viscosity of a cellulose ether (such as ethyl cellulose (column 2 line 19)) with hydrogen peroxide (title) (i.e. CELLULOSE ETHER + HYDROGEN PEROXIDE) while Schulz teach that the cellulose ether (such as ethylcellulose) (column 6 line

38) is depolymerized by contacting with a strong acid (column 4 lines 39-41) in particular hydrogen chloride (claim 9) (i.e. CELLULOSE ETHER + HYDROGEN CHLORIDE). Savage teaches that the hydrogen peroxide initiates the scission of the cellulose ether (column 3 lines 50-51) and that residual peroxide can be removed by heating shortly after blending at particular temperatures to decompose the peroxide (column 3 lines 50-60). As such, Savage teach that heating can be used to neutralize the initiating agent of the reaction which is hydrogen peroxide since decomposing the peroxide will make it ineffective. Since the art (see for example Schulz and Savage) teach CELLULOSE ETHER + INITIATOR for a depolymerization reaction one would recognize that neutralization occurs when the initiator is rendered ineffective. In the instant case, one would recognize that the heating step of Savage is aimed at rendering ineffective the initiator (i.e. hydrogen peroxide). The analogous step in the process of Schulz would be aimed at rendering ineffective the initiator hydrogen chloride. In reply to appellants' inquiry, one meaning of 'neutralization' includes increasing the pH of an acid by adding base or decreasing the pH of a base by adding an acid. However, such meaning is not the only meaning of the phrase neutralization and such meaning is not read into the claims. It is noted that the instant specification does not provide a specific definition of neutralization to limit it to the asserted definition. Further, it is noted that appellants own specification (page 6 lines 17-18) states that hydrogen chloride can be removed by stripping with an inert gas such as nitrogen. Thus, adjusting via pH is not the only method of rending the initiator hydrogen chloride ineffective.

Taken together, Rosenberg and Schulz and Savage both teach a goal of depolymerization of cellulose ether by using an initiator (Rosenberg teach an acid (claim 1b) Schulz teach

hydrogen chloride and Savage teach hydrogen peroxide) and as such recognize a particular problem in the art. In discussing the process conditions of the depolymerization process (column 3 line 30) Savage notes that the viscosity is adjusted as required for a particular application and can be used or packaged without further treatment (column 3 lines 66-68). As such, Savage suggests that additional processing after the depolymerization is not critical and depends on the particular application. In Run 2-2 (Column 4) Savage shows a viscosity drop from 400 cps (the viscosity of the control of run 2-1) to 85 cps with no heating (i.e. neutralization step). Savage expressly teaches that the final product can be packaged without further treatment (column 3 lines 66-68). In the instant case, Savage provides details of the final processing steps and suggests that the steps are unnecessary unless a particular product such as a viscosity grade stable product is desired (column 3 lines 50-70). Since Schulz does not teach a need for a viscosity grade stable product (nor do the instant claims expressly refer to stability) one would be motivated to use and apply the teachings of Savage regarding final processing steps to the method of Schulz. In particular, one would be motivated to carry out the method of Schulz without a neutralization step as recited in the instant claims. One would be motivated to package the depolymerized ethylcellulose without neutralization steps for applications in which fewer steps are desired (to reduce costs, simplified operation, or for immediate use for example) based on the teachings of Savage. One would have an expectation of success based on the teachings of Savage. Further, it is noted that the goal of Schulz is depolymerization. Schulz expressly teach the acid as the initiator of the depolymerization (column 4 lines 39-41). Neutralizing the hydrogen chloride (i.e. the initiator) which is the initiator that leads to the depolymerization is contrary to the goal of depolymerizing the cellulose. It is noted that section 2144.04 II of the

MPEP states that the omission of an element and its function is obvious if the function of the element is not desired. In the instant case, both Schulz and Savage teach depolymerization of ethylcellulose as a goal. Schulz expressly teach the acid as the initiator of the depolymerization (column 4 lines 39-41). Neutralizing the hydrogen chloride (i.e. the initiator), which is the initiator that leads to the depolymerization, is contrary to the goal of depolymerizing the cellulose. Further, Savage teach that the final product with its viscosity adjusted as required can be packaged without further treatment.

Further, even if one were to consider some type of neutralization step as part of the process, the instant claims merely require 'packaging the depolymerized ethycellulose without a neutralization step after polymerization'. Thus, as long as the ethylcellulose is depolymerized and packaged prior to any neutralization the claim limitations are met. It is noted that Schulz teach in Example 1 (column 6 lines 60 – column 7 line 7) that hydrogen chloride gas was added to a reactor to depolymerize the cellulose. Next, the reactor was placed in an oven (column 78 lines 1-2). Since the depolymerized cellulose was placed in an oven the depolymerized cellulose was packaged without a neutralization step. It is noted that no specific definition is provided for the term 'packaging'. Further, it is noted that at a particular point in time (at the instant the reactor was placed in the oven) that the depolymerized cellulose was packaged as recited in the claims. Savage also teach that if the heating step is to occur it is to occur after the cellulose ether and peroxide have been blended (column 3 lines 53-56). Since the blending necessarily occurs in a vessel which would enclose or hold (i.e. package) the components, the depolymerized cellulose is packaged prior to any neutralization steps as recited in the instant claims.

Although Appellants argue that Rosenberg fail to teach ethylcellulose, specific ethoxyl contents, or hydrogen halide, it is noted that the instant rejection relies on numerous other references than just Rosenberg. Savage (US 3,728,331) teach a process for reducing the viscosity of a cellulose ether (abstract). Savage specifically teaches the process for ethyl cellulose (column 2 line 19) and teaches depolymerization (column 2 line 49) using hydrogen peroxide (title). Savage teach that the final product with its viscosity adjusted as required for a particular application can be used or packaged without further treatment (column 3 lines 66-68). Schulz teach a process for making low molecular weight cellulose ethers (title). Schulz teach that the high molecular weight cellulose ether (such as ethylcellulose (column 6 line 38) is depolymerized by contacting with a strong acid (column 4 lines 39-41) in particular hydrogen chloride (claim 9). Thus Savage and Schulz teach ethylcellulose and Schulz teach hydrogen halide. Pyle (US 2,711,965) teach the treatment of cellulose ethers (first paragraph). Pyle teach that ethylcellulose compositions are known to be useful (column 1 lines 24-27). Pyle specifically describe cellulose ethers that are organic solvent-soluble in common organic solvents (column 4 line 14-18). In example 1, Pyle teach a specific ethycellulose composition that contained 46.5% ethoxyl groups and was dissolved in a solvent consisting of 80 parts toluene and 20 parts ethanol to give a 5% solution with a viscosisty of 97 cps (i.e. 97 mPa•s) at 25 °C (column 2 lines 14-18). As such, Pyle teach the claim limitations regarding the ethoxyl content and viscosity of the starting material of the instant invention. Since Schulz teach a general process of depolymerizing cellulose ethers one would be motivated to use the process for cellulose ethers specifically those cellulose ethers which have known applications. Pyle recognize that ethylcelluloses with preferably 43% to 48% ethoxyl content are particularly useful (column 4 lines 23-27). In

example 1, Pyle teach a specific ethycellulose composition that contained 46.5% ethoxyl groups and was dissolved in a solvent consisting of 80 parts toluene and 20 parts ethanol to give a 5% solution with a viscosisty of 97 cps (i.e. 97 mPa•s) at 25 °C (column 2 lines 14-18). As such, Pyle provides a specific example and the reference itself is evidence of the known range of useful ethoxyl concentrations. Therefore Pyle teach a similar process with specific ethoxyl content and viscosity of the starting material as in claims 1,8 of the currently claimed invention as well as the presence of organic solvents as in claim 8a of the current invention.

Although Appellants argue that there is no evidence that depolymerization with an acid and with hydrogen peroxide are similar to combine the references, Savage teach a process for reducing viscosity of a cellulose ether (such as ethyl cellulose (column 2 line 19)) with hydrogen peroxide (title) (i.e. CELLULOSE ETHER + HYDROGEN PEROXIDE) while Schulz teach that the cellulose ether (such as ethylcellulose (column 6 line 38) is depolymerized by contacting with a strong acid (column 4 lines 39-41) in particular hydrogen chloride (claim 9) (i.e. CELLULOSE ETHER + HYDROGEN CHLORIDE). Both Savage and Schulz teach a goal of depolymerization of cellulose ether (i.e. CELLULOSE ETHER + INITIATOR) and as such recognize a particular problem in the art. It is noted that MPEP section 2141.01(a) states:
"Under the correct analysis, any need or problem known in the field of endeavor at the time of the invention and addressed by the patent [or application at issue] can provide a reason for combining the elements in the manner claimed. " KSR International Co. v. Teleflex Inc., 550 U.S. ___, ___, 82 USPQ2d 1385, 1397 (2007).

In the instant case, both Savage and Schulz teach a goal of depolymerization of cellulose ether and as such recognize a particular problem in the art.

Section 2141 of the MPEP states:

"A person of ordinary skill in the art is also a person of ordinary creativity, not an automaton."KSR, 550 U.S. at ___, 82 USPQ2d at 1397. "[I]n many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle."Id. Office personnel may also take into account "the inferences and creative steps that a person of ordinary skill in the art would employ."Id. at ___, 82 USPQ2d at 1396.

In the instant case, both Savage and Schulz teach a goal of depolymerization of cellulose ether and as such recognize a particular problem in the art. A person of ordinary skill in the art would consider the suggestive power of the references in order to address the problem in the art.

Although Appellants argue that neutralization in the Savage process is meaningless, in accord with section 2111 of the MPEP the claims are given the broadest reasonable interpretation. A commonly used definition of the word 'neutralize' is to make ineffective. In the instant case, Savage teach a process for reducing viscosity of a cellulose ether (such as ethyl cellulose (column 2 line 19)) with hydrogen peroxide (title) (i.e. CELLULOSE ETHER + HYDROGEN PEROXIDE) while Schulz teach that the cellulose ether (such as ethylcellulose (column 6 line 38) is depolymerized by contacting with a strong acid (column 4 lines 39-41) in particular hydrogen chloride (claim 9) (i.e. CELLULOSE ETHER + HYDROGEN CHLORIDE). Savage teaches that the hydrogen peroxide initiates the scission of the cellulose ether (column 3 lines 50-51) and that residual peroxide can be removed by heating shortly after blending at particular temperatures to decompose the peroxide (column 3 lines 50-60). As such, Savage teach that heating can be used to neutralize the initiating agent of the reaction which is hydrogen peroxide since decomposing the peroxide will make it ineffective. Thus Savage does

provide a teaching regarding neutralization. Since the art (see for example Schulz and Savage) teach CELLULOSE ETHER + INITIATOR for a depolymerization reaction one would recognize that neutralization occurs when the initiator is rendered ineffective. In the instant case, one would recognize that the heating step of Savage is aimed at rendering ineffective the initiator (i.e. hydrogen peroxide). The analogous step in the process of Schulz would be aimed at rendering ineffective the initiator hydrogen chloride.

Response to Appellants Arguments – Double Patenting (Shulz in view of Shulz, Keary, Pyle , and Savage):C.

The rejection of claims 1-5,7,8,17-19 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-13 of U.S. Patent No. 6,261,218 ('218) in view of Schulz (US 6,261,218), Keary (US 6,294,008), Pyle (US 2,711,965), and Savage (US 3,728,331) is withdrawn.

In the instant case, appellant provide new arguments (page 13) which are persuasive. Further, MPEP section 804 states: "A double patenting rejection of the obviousness-type>, if not based on an anticipation rationale,< is “analogous to [a failure to meet] the nonobviousness requirement of 35 U.S.C. 103” except that the patent principally underlying the double patenting rejection is not considered prior art. In re Braithwaite, 379 F.2d 594, 154 USPQ 29 (CCPA 1967).” Thus, U.S. Patent No. 6,261,218 ('218) (i.e. the patent principally underlying the double patenting rejection) is not considered prior art.

Response to Appellants Arguments – Double Patenting (Keary in view of Shulz, Keary, Pyle , and Savage):D.

The rejection of claims 1-5,7,8,17-19 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 10-20 of U.S. Patent No. 6,294,008 ('008) in view of Schulz (US 6,261,218), Keary (US 6,294,008), Pyle (US 2,711,965), and Savage (US 3,728,331) is withdrawn.

In the instant case, appellant provide new arguments (page 13) which are persuasive. Further, MPEP section 804 states: "A double patenting rejection of the obviousness-type>, if not based on an anticipation rationale,< is "analogous to [a failure to meet] the nonobviousness requirement of 35 U.S.C. 103" except that the patent principally underlying the double patenting rejection is not considered prior art. In re Braithwaite, 379 F.2d 594, 154 USPQ 29 (CCPA 1967)." Thus, U.S. Patent No. 6,294,008 ('008) (i.e. the patent principally underlying the double patenting rejection) is not considered prior art.

Conclusion

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Ronald T Niebauer/

Examiner, Art Unit 1654

Conferees:

/Anish Gupta/

Primary Examiner, Art Unit 1654

/Cecilia Tsang/

Supervisory Patent Examiner, Art Unit 1654

/JON P WEBER/

Supervisory Patent Examiner, Art Unit 1657